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AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON THE BASIS OF THESE PRESCRIPTIONS */

(Revision 2, including the amendments entered into force on 16 October 1995)

Addendum 96: Regulation No. 97

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UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLE ALARM SYSTEMS (VAS) AND OF MOTOR VEHICLES WITH REGARD TO THEIR ALARM SYSTEMS (AS)

UNITED NATIONS

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*/ Former title of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

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Regulation No. 97

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLE ALARM SYSTEMS (VAS) AND OF MOTOR VEHICLES WITH REGARD TO THEIR ALARM SYSTEMS (AS)

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1. SCOPE

This regulation applies to :

1.1. PART 1 : Vehicle Alarm Systems (VAS) which are intended to be permanently fitted to vehicles of category M1 and those of category N1 with a maximum mass of not more than 2 tonnes. */

1.2. PART II : Vehicles of category M1 and those of category N1 with a maximum mass of not more than 2 tonnes, with regard to their alarm system(s) (AS). */

PART I - APPROVAL OF VEHICLE ALARM SYSTEMS

2. DEFINITIONS

For the purpose of Part I of this Regulation,

2.1. "Vehicle alarm system" (VAS) means a system intended for installation on (a) type(s) of vehicle(s), designed to indicate intrusion into or interference with the vehicle; these systems may provide additional protection against unauthorized use of the vehicle;

2.2. "Sensor" means a device which senses a change which could be caused by intrusion into or interference with a vehicle;

2.3. "Warning device" means a device indicating that intrusion into or interference has occurred;

2.4. "Control equipment" means equipment necessary for the setting, unsetting and testing of a VAS and for sending an alarm condition to warning devices;

2.5. "Set" means the state of a VAS in which an alarm condition can be transmitted to warning devices;

2.6. "Unset" means the state of a VAS in which an alarm condition cannot be transmitted to warning devices;

2.7. "Key" means any device designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated only by that device;

2.8. "Type of Vehicle Alarm System" means systems which do not differ significantly in such essential aspects as :

the manufacturer's trade name or mark,
the kind of sensor,

*/ Only vehicles with 12 volts electrical systems are considered.

the kind of warning device,
the kind of control equipment;

2.9. "Approval of a Vehicle Alarm System" means the approval of a type of VAS with respect to the requirements laid down in paragraphs 5, 6 and 7 below.

2.10. "Immobilizer" means a device which is intended to prevent the vehicle being driven away powered by its own engine.

2.11. "Panic Alarm" means a device which enables a person to use an alarm, installed on the vehicle, to summon assistance in an emergency.

3. APPLICATION FOR APPROVAL OF VAS

3.1. The application for approval of a VAS shall be submitted by the manufacturer of the VAS or by his duly accredited representative.

3.2. For each type of VAS the application must be accompanied by :

3.2.1. Documentation in triplicate giving a description of the technical characteristics of the VAS and the method of its installation;

3.2.2. Three samples of the type of VAS with all its components. Each of the main components must be clearly and indelibly marked with the applicant's trade name or mark and the type designation of that component.

3.2.3. (A) vehicle(s) fitted with the VAS to be type-approved, chosen by the applicant in agreement with the technical service responsible for conducting approval tests.

3.2.4. Instructions in triplicate in accordance with paragraph 8 below.

3.3. The competent authority shall verify the existence of satisfactory arrangements for ensuring effective control of the conformity of production before type-approval is granted.

4. APPROVAL

4.1. If the VAS submitted for approval pursuant to this Regulation meets the requirements of paragraphs 5, 6 and 7 below, approval of that type of VAS shall be granted.

4.2. An approval number shall be assigned to each type approved. Its first two digits (00 for the Regulation in its present form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another type of VAS.

4.3. Notice of approval or of extension or of refusal of approval of a type of VAS pursuant to this Regulation shall be communicated to the Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 1 to this Regulation.

4.4. There shall be affixed, conspicuously and in a readily accessible place specified on the approval form, to the main component(s) of the VAS conforming to a type of VAS approved under this Regulation, an international approval mark consisting of :

4.4.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval 1/;

4.4.2. The number of this Regulation, followed by the letter "R", a dash and the approval number in the vicinity of the circle prescribed in paragraph 4.4.1.

4.4.3. The approval mark shall be clearly legible and indelible.

4.4.4. Annex 3 to this Regulation gives examples of arrangements of approval marks.

4.5. As an alternative to the approval mark described in paragraph 4.4. above, a certificate of conformity shall be issued for every VAS offered for sale.

Where a VAS manufacturer supplies an approved unmarked VAS to a vehicle manufacturer, for fitment by that manufacturer as original equipment for a vehicle model or range of vehicle models, the VAS manufacturer shall supply a number of copies of the certificate of conformity to the vehicle manufacturer, sufficent for that manufacturer to obtain the vehicle approval to Part II of this Regulation.

If the VAS is made up of separate components, its main component(s) shall bear a reference mark and the certificate of conformity shall provide a list of such reference marks.

1/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 vacant, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30-36 (vacant) and 37 for Turkey. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement concerning the Recognition of Approval for Motor Vehicle Equipment and Parts, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

A model of the certificate of conformity is given in Annex 4 to this Regulation.

5. GENERAL SPECIFICATIONS

5.1. VAS shall, in the event of intrusion into or interference with a vehicle, provide a warning signal.
The warning signal shall be audible and in addition may include optical warning devices, or be a radio alarm or any combination of the above.

5.2. VASs shall be designed, constructed and installed in such a way that the vehicle when equipped shall continue to comply with the relevant technical requirements, especially with regard to electromagnetic compatibility (EMC).

5.3. If the VAS includes the possibility of a radio transmission, e.g. for setting or unsetting of the alarm or for alarm transmission, it shall comply with the relevant ETSI Standards. 2/ The frequency must be 433.92 MHz and the maximum radiated power 25 mW.

5.4. The installation of a VAS in a vehicle shall not be capable of influencing the vehicle's performance (in the unset state), or its safe operation.

5.5. The VAS and components thereof shall not activate inadvertently, particularly whilst the engine is in its running mode.

5.6. Failure of the VAS, or failure of its electrical supply shall not affect the safe operation of the vehicle.

5.7. The VAS, its components and the parts controlled by them shall be designed, built and installed in such a way as to minimize the risk for anyone to make them inoperable or to destroy them rapidly and without calling attention, e.g. using low-cost, easily-concealed tools, equipment or fabrications readily available to the public at large.

5.8. The means of setting and unsetting of the VAS shall be designed in such a way that it does not invalidate the requirements of Regulation No. 18. Electrical connections to components covered by this Regulation are allowed.

5.9. The system shall be so arranged that the shorting out of any warning signal circuit shall not render inoperative any aspects of the alarm system, other than the circuit which is shorted out.

2/ ETSI: European Telecommunications Standards Institute.
If these Standards are not available when this Regulation comes into force, then the relevant domestic requirements shall apply.

5.10. VAS may include an immobilizer which shall comply with the requirements of paragraph 6.5. below. In this case, the installation certificate mentioned in paragraph 8.2. below shall contain a statement to the effect that the requirements of paragraph 6.5. are fulfilled.

6. PARTICULAR SPECIFICATIONS

6.1. Protection range

6.1.1. Specific requirements

The VAS shall at least detect and signal the opening of any vehicle door, engine bonnet and luggage compartment. The failure or switching off of light sources, e.g. passenger compartment light, shall not impair the control operation.

Additionally, it may comprise an immobilization facility (see paragraph 6.5. below).

Additional efficient sensors for information/display, e.g. :

of intrusions into the vehicle, e.g. passenger compartment control, window glass control, breakage of any glazed area, or

of attempted vehicle theft, e.g. inclination sensor

are allowed, taking account of measures to prevent any unnecessary sounding of the alarm (= false alarm, see paragraph 6.1.2. below).

Insofar as these additional sensors generate an alarm signal even after an intrusion has occurred (e.g. by breakage of a glazed area) or under external influences (e.g. wind), the alarm signal, activated by one of the above-mentioned sensors, shall be activated not more than 10 times within the same activation period of the VAS.

In this case the activation period shall be limited by the authorized unsetting of the system as a result of the vehicle user's action.

Some kinds of additional sensors, e.g. passenger compartment control (ultrasonic, infrared) or inclination sensor, etc. ..., may be intentionally deactivated. In this case, separate deliberate action must be taken each time before the VAS is set. It must not be possible to deactivate the sensors while the alarm system is in a set state.

6.1.2. Safety against false alarm.

6.1.2.1. By adequate measures, e.g.

mechanical design and design of the electrical circuit according to conditions specific to motor vehicles,

selection and application of operation and control principles for the alarm system and components thereof,

it shall be ensured that the VAS both in set and unset conditions, cannot cause the alarm signal to sound unnecessarily, in the event of:

an impact on the vehicle : test specified in paragraph 7.2.13.;

electromagnetic compatibility : tests specified in paragraph 7.2.12.;

reduction of battery voltage by continuous discharge : test specified in paragraph 7.2.14.;

false alarm of the passenger compartment control : test specified in paragraph 7.2.15.

6.1.2.2. If the applicant for approval can demonstrate, e.g. by technical data, that safety against false alarm is satisfactorily ensured, the technical service responsible for conducting approval tests may not require some of the above tests.

6.2. Audible alarm

6.2.1. General

The warning signal shall be clearly audible and recognizable and shall differ significantly from the other audible signals used in road traffic.

In addition to the original equipment audible warning device, a separate audible warning device may be fitted in the area of the vehicle which is controlled by the VAS, where it shall be protected against easy, rapid access by persons.

If a separate audible warning device according to paragraph 6.2.3.1. below is used, the original equipment standard audible warning device may additionally be actuated by the VAS, provided that any tampering with the standard audible warning device (generally more easily accessible) does not affect the operation of the additional audible warning device.

6.2.2. Duration of the audible signal

Minimum : 25 s
Maximum : 30 s.

The audible signal may sound again only after the next interference with the vehicle, i.e. after the above-mentioned time span.
(Restrictions : see paragraphs 6.1.1. and 6.1.2. above).

Unsetting of the alarm system shall immediately cut the signal.

6.2.3. Specifications concerning the audible signal.

6.2.3.1. Constant tone signal device (constant frequency spectrum), e.g. horns : acoustical, etc... data according to ECE Regulation No. 28, Part. I.

Intermittent signal (on/off) :
Trigger frequency.....(2 ± 1) Hz
On time = off time ± 10 %

6.2.3.2. Audible signal device with frequency modulation : acoustical, etc... data according to ECE Regulation No. 28, Part I but equal passage of a significant frequency range within the above-mentioned range (1,800 through 3,550 Hz) in both directions.

Passage frequency ..... (2 ± 1) Hz

6.2.3.3. Sound level

The sound source shall be :

either an audible warning device approved under ECE Regulation No. 28, Part I

or a device meeting the requirements of ECE Regulation No. 28, Part I, paragraph 6.1. and 6.2.

However, in the case of a different sound source from the original equipment audible warning device, the minimum sound level may be reduced to 100 dB(A), measured under the conditions of ECE Regulation No. 28, Part I.

6.3. <u>Optical alarm - if fitted</u>

6.3.1. General

In the event of intrusion into or interference with the vehicle, the device shall activate an optical signal as specified in paragraphs 6.3.2. and 6.3.3. below.

6.3.2. Duration of the optical signal

The optical signal shall have a duration between 25 s and 5 min. after the alarm has been activated.
The unsetting of the alarm system shall immediately stop the signal.

6.3.3. Type of optical signal

Flashing of all direction indicators and/or passenger compartment light of the vehicle, including all lamps in the same electrical circuit.

Trigger frequency..... (2 ± 1) Hz

In relation to the audible signal, also asynchronous signals are allowed.

On time = off time ± 10 %

6.4. Radio alarm (pager) - if fitted

The VAS may include a facility generating an alarm signal by radio transmission.

6.5. Immobilizer - if fitted

If this facility, when fitted, has an influence on the ignition and/or the fuel supply system, measures shall be provided to avoid immobilization of the vehicle whilst the engine is in its running mode.
This facility shall not impair the vehicle's normal operation, even in the event of malfunction.

6.6. Alarm system setting lock

6.6.1. When the engine is in its running mode, deliberate or inadvertent setting of the alarm system shall be impossible.

6.7. Setting and unsetting of the VAS

6.7.1. Setting
Any suitable means of setting of the VAS is allowed, provided that such means does not inadvertently cause false alarms.

6.7.2. Unsetting
Unsetting of the VAS shall be achieved by one or a combination of the following devices. Other devices giving an equivalent performance are permitted.

6.7.2.1. A mechanical key (complying with the requirements of Annex 8 to this Regulation) which can be coupled with a centralized vehicle locking system comprising at least 1,000 variants, operated from the outside.

6.7.2.2. Electrical/electronic device, e.g. remote control, with at least 50,000 variants and shall incorporate rolling codes and/or have a minimum scan time of 24 hours per 5,000 variants.

6.7.2.3. A mechanical key or an electrical/electronic device within the protected passenger compartment, with timed exit/entry delay.

6.8. Exit delay

If the switching device for setting the VAS is fitted within the protected area, an exit delay shall be provided. It shall be possible for the exit delay to be set to between 15 seconds and 45 seconds after the switch has been operated. The delay period may be adjustable to suit individual operators' circumstances.

6.9. Entry delay

If the device for unsetting the VAS is fitted within the protected area, a delay of 5 seconds minimum and 15 seconds maximum shall be allowed before the activation of the audible and optical signals. The delay period may be adjustable to suit individual operators' circumstances.

6.10. Status display

6.10.1. To provide information on the status of the VAS (set, unset, alarm setting period, alarm has been activated), optical displays inside and outside the passenger compartment are allowed. The light intensity of optical signals installed outside the passenger compartment shall not exceed 0.5 cd.

6.10.2. If an indication of short-term "dynamic" processes such as changes from "set" to "unset" and vice versa is provided, it shall be optical, according to paragraph 6.10.1. Such optical indication may also be produced by the simultaneous operation of the direction indicators and/or passenger compartment lamp(s), provided that the duration of the optical indication by the direction indicators does not exceed 3 seconds.

6.11. Power supply

The source of power for the VAS may be the vehicle battery. Where provided, an additional battery shall be rechargeable and it shall by no means supply energy to the other parts of the vehicle electrical system.

6.12. Specifications for optional functions

6.12.1. Self check, automatic failure indication

On setting the VAS, irregular situations, e.g. open doors, etc., can be detected by a self-check function (plausibility control), and this situation is indicated.

6.12.2. Panic alarm

An optical and/or audible and/or radio alarm is allowed independent of the state (set or unset) and/or function of the VAS. Such an alarm shall be triggered from within the vehicle and shall not affect the state (set or unset) of the VAS. Also it must be possible for the vehicle user to switch off the panic alarm. In the case of an audible alarm, its sounding duration per activation shall not be restricted. A panic alarm shall not immobilize the engine or stop it if it is running.

7. OPERATION PARAMETERS AND TEST CONDITIONS 3/

7.1. Operation parameters

All components of the VAS shall operate without any failure under the following conditions.

7.1.1. Climatic conditions

Two classes of environmental temperature are defined as follows :

-40° C to +85° C for parts to be fitted in the passenger or luggage compartment;
-40° C to +125° C for parts to be fitted in the engine compartment unless otherwise .pecified.

7.1.2. Degree of protection for installation

The following degrees of protection in accordance with IEC Publication 529-198⁰ shall be provided:

IP 40 for parts to be fitted in the passenger compartment;
IP 42 for parts to be fitted in the passenger compartment of roadsters/convertibles and cars with moveable roof-panels if the installation location requires a higher degree of protection than IP 40;
IP 54 for all other parts.

The VAS manufacturer shall specify in the installation instructions any restrictions on the positionning of any part of the installation with respect to dust, water and temperature.

7.1.3. Weatherability

7 days according to IEC 68-2-30-1980.

3/ Lamps which are used as part of the optical warning devices and which are included in the standard car lighting system need not comply with the operation parameters in paragraph 7.1. and shall not be submitted to tests listed under paragraph 7.2.

7.1.4. Electrical conditions

Rated supply voltage : 12 V
Operation supply voltage range : from 9 V to 15 V in the temperature range according to paragraph 7.1.1.
Time allowance for excess voltages at 23°C: U = 18 V, max. 1 h
U = 24 V, max. 1 min.

7.2. Test conditions

7.2.1. Operation tests

7.2.1.1. Compliance of the VAS with the following specifications shall be checked :

Alarm duration according to paragraphs 6.2.2. and 6.3.2.;

Frequency and on/off ratio according to paragraphs 6.3.3. and 6.2.3.1. or 6.2.3.2. respectively;

Number of alarm cycles according to paragraph 6.1.1., if applicable;

Alarm system setting lock check according to paragraph 6.6.

7.2.1.2. Normal test conditions

Voltage..... U = (12 ± 0.2) V
Temperature..... Θ = (23 ± 5)°C

7.2.2. Resistance to temperature and voltage changes

Compliance with the specifications defined under paragraph 7.2.1.1. shall also be checked under the following conditions :

7.2.2.1.

Test temperature	Θ	=	(-40 ± 2)° C
Test voltage	U	=	(9 ± 0.2) V
Storage duration	4 hours		

7.2.2.2. For parts to be fitted in the passenger or luggage compartment

Test temperature	Θ	=	(+85 ± 2)° C
Test voltage	U	=	(15 ± 0.2) V
Storage duration	4 hours		

7.2.2.3. For parts to be fitted in the engine compartment unless otherwise specified

Test temperature	Θ	=	(+125 ± 2)° C
Test voltage	U	=	(15 ± 0.2) V
Storage duration	4 hours		

7.2.2.4. The VAS, in both set and unset state, shall be submitted to an excess voltage equal to (18 ± 0.2) V for 1 hour.

7.2.2.5. The VAS, in both set and unset state, shall be submitted to an excess voltage equal to (24 ± 0.2)V for 1 min.

7.2.3. Safe operation after foreign body and water-tightness testing

After the test for tightness to foreign body and water according to IEC 529-1989, for degrees of protection as in paragraph 7.1.2., the operation tests according to paragraph 7.2.1. shall be repeated.

7.2.4. Safe operation after condensed water test

After a resistance-to-humidity test to be carried out according to IEC 68-2-30 (1980) the operation tests according to paragraph 7.2.1. shall be repeated.

7.2.5. Test for safety against reversed polarity

The VAS and components thereof shall not be destroyed by reversed polarity up to 13 V during 2 min.
After this test the operation tests according to paragraph 7.2.1. shall be repeated.

7.2.6. Test for safety against short-circuits

All electrical connections of the VAS must be short-circuit proof against earth, max. 13 V and/or fused.
After this test the operation tests according to paragraph 7.2.1. shall be repeated, with fuses changed if necessary.

7.2.7. Energy consumption in the set condition

The energy consumption in set condition under the conditions given in paragraph 7.2.1.2. shall not exceed 20 mA for the complete alarm system including status display.

7.2.8. Safe operation after vibration test

7.2.8.1. For this test, the components are subdivided into two types :

Type 1 : components normally mounted on the vehicle
Type 2 : components intended for attachment to the engine.

7.2.8.2. The components/VAS shall be submitted to a sinusoidal vibration mode whose characteristics are as follows :

7.2.8.2.1. For type 1

The frequency shall be variable from 10 Hz to 500 Hz with a maximum amplitude of ± 5 mm and maximum acceleration of 3 g (0-peak).

7.2.8.2.2. For type 2

The frequency shall be variable from 20 Hz to 300 Hz with a maximum amplitude of ± 2 mm and maximum acceleration of 15 g (0-peak).

7.2.8.2.3. For both type 1 and type 2 :

the frequency variation is 1 octave/min;

the number of cycles is 10, the test shall be performed along each of the 3 axes;

the vibrations are applied at low frequencies at a maximum constant amplitude and at a maximum constant acceleration at high frequencies.

7.2.8.3. During the test the VAS shall be electrically connected and the cable shall be supported after 200 mm.

7.2.8.4. After the vibration test the operation tests according to paragraph 7 2.1. shall be repeated.

7.2.9. Durability test

Under the test conditions specified in paragraph 7.2.1.2., triggering of 300 complete alarm cycles (audible and/or optical) with a rest time of the audible device of 5 min.

7.2.10. Tests for external key switch (installed on the outside of the vehicle)

The following tests shall only be performed if the locking cylinder of the original equipment door lock is not used.

7.2.10.1. The key switch shall be so designed and constructed that it remains fully effective even after :
2,500 set/unset cycles in each direction, followed by
96 hours minimum of exposure to salt spray test according to IEC 68-2-11-1981, corrosion resistance test.

7.2.11. Test of systems for the protection of the passenger compartment

The alarm shall be activated, when a vertical panel of 0.2 x 0.15 m is inserted for 0.3 m (measured from the centre of the vertical panel) through an open front door window into the passenger compartment, towards the front and parallel to the road at a speed of 0.4 m/s and at an angle of 45° with the longitudinal median plane of the vehicle. (See drawings in Annex 6 to this Regulation).

7.2.12. Electromagnetic compatibility

The VAS shall be submitted to the tests described in Annex 7.

7.2.13. Safety against false alarm in the event of an impact on the vehicle

It shall be verified that an impact of up to 4.5 Joules of a hemispherical body with 165 mm in diameter and 70 ± 10 Shore A applied anywhere to the vehicle bodywork or glazing with its curved surface does not cause false alarms.

7.2.14. Safety against false alarm in the event of a voltage reduction

It shall be verified that slow reduction of the main battery voltage by continuous discharge of 0.5 V per hour down to 3 V does not cause false alarms.
Test conditions : see paragraph 7.2.1.2. above.

7.2.15. Test for safety against false alarm of the passenger compartment control

Systems intended for the protection of the passenger compartment according to paragraph 6.1.1. above shall be tested together with a vehicle under normal conditions (para. 7.2.1.2.).

The system, installed according to the manufacturer's instructions, shall not be triggered when subjected 5 times to the test described in paragraph 7.2.13. above at intervals of 0.5 s.

The presence of a person touching or moving around the outside of the vehicle (windows closed) shall not cause any false alarm.

8. INSTRUCTIONS

Each VAS shall be accompanied by :

8.1. Instructions for installation :

8.1.1. The list of vehicles and vehicle models for which the device is intended. This list may be specific or generic, e.g. "all cars with petrol engines and 12 V negative earth batteries".

8.1.2. The method of installation illustrated by photographs and/or very clear drawings.

8.1.3. In the case of VAS which includes an immobilizer, additional instructions regarding compliance with the requirements of paragraph 6.5. above.

8.2. A blank installation certificate, an example of which is given in Annex 5.

8.3. A general statement to the VAS purchaser calling his attention to the following points :

The VAS should be installed in accordance with the manufacturer's instructions;

The selection of a good installer is recommended (the VAS manufacturer may be contacted to indicate appropriate installers);

The installation certificate supplied with the VAS should be completed by the installer.

8.4. Instructions for use

8.5. Instructions for maintenance

8.6. A general warning regarding the danger of making any alterations or additions to the system; such alterations or additions would automatically invalidate the certificate of installation referred to in paragraph 8.2. above.

8.7. Indication of the location(s) of the international approval mark mentioned in paragraph 4.4. of this Regulation and/or the international certificate of conformity mentioned in paragraph 4.5. of this Regulation.

9. MODIFICATION OF THE VAS TYPE AND EXTENSION OF APPROVAL

Every modification of the VAS type shall be notified to the administrative department which approved this type of VAS.

The department may then either

consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the VAS still complies with the requirements; or

require a further test report for some or all the tests described in paragraphs 5, 6 and 7 of this Regulation from the technical service responsible for conducting the tests.

Confirmation or refusal of approval, specifying the alteration, shall be communicated by the procedure specified in paragraph 4.3. above to the Contracting Parties to the Agreement applying this Regulation.

The competent authority issuing the extension of approval shall assign a serial number to each communication form drawn up for such an extension.

10. CONFORMITY OF PRODUCTION

10.1. Every vehicle alarm system approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set out in paragraphs 5, 6 and 7 above.

10.2. In order to verify that the requirements of paragraph 10.1. are met, suitable checks of the production shall be carried out.

10.3. The holder of the approval shall in particular :

10.3.1. Ensure existence of procedures for effective quality control of the VAS.

10.3.2. Have access to the testing equipment necessary for checking conformity of each approved type.

10.3.3. Ensure that test result data are recorded and that the Annexed documents remain available for a period to be determined in agreement with the administrative service.

10.3.4. Analyse the results of each type of test, in order to verify and ensure the consistency of the VAS characteristics, making allowance for permissible variations in industrial production.

10.3.5. Ensure that for each type of VAS, the tests prescribed in paragraphs 7.2.1. to 7.2.10. are carried out on a statistically controlled and random basis, in accordance with one of the regular quality assurance procedures.

10.3.6. Ensure that any set of samples or test pieces giving evidence of non-conformity in the type of test in question shall give rise to a further sampling and test.
All necessary steps shall be taken to restore conformity of the corresponding production.

10.4. The competent authority which has granted type approval may at any time verify the conformity control methods applied in each production unit.

10.4.1. At every inspection, the test records and production records shall be presented to the visiting inspector.

10.4.2. The inspector may select samples at random to be tested in the manufacturer's laboratory. The minimum number of samples may be determined according to the results of the manufacturer's own checks.

10.4.3. Where the quality level appears unsatisfactory or it seems necessary to verify the validity of the tests carried out in application of paragraph 10.4.2., the inspector shall select samples to be sent to the technical service which conducted the type-approval tests.

10.4.4. The competent authority may carry out any test prescribed in this Regulation.

10.4.5. The normal frequency of inspections authorized by the competent authority shall be one every two years. In cases where unsatisfactory results are found during one of these inspections, the competent authority shall ensure that all necessary steps are taken to restore conformity of production as rapidly as possible.

11. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

11.1. The approval granted in respect of a type of VAS pursuant to this Regulation may be withdrawn if the requirements laid down in paragraph 10 above are not complied with.

11.2. If a Contracting Party to the Agreement applying this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation, by means of a form conforming to the model in Annex 1 to this Regulation.

12. PRODUCTION DEFINITELY DISCONTINUED

If the holder of the approval completely ceases to manufacture a type of VAS approved in accordance with this Regulation, he shall so inform the authority which granted the approval.

Upon receiving the relevant communication, that authority shall inform thereof the other Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 1 to this Regulation.

13. NAMES AND ADDRESSES OF TECHNICAL SERVICES RESPONSIBLE FOR CONDUCTING APPROVAL TESTS, AND OF ADMINISTRATIVE DEPARTMENTS

The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations secretariat the names and addresses of the technical services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval, issued in other countries are to be sent.

PART II - APPROVAL OF A VEHICLE WITH REGARD TO ITS ALARM SYSTEM

When a VAS approved to Part I of this Regulation is being used in a vehicle submitted for approval to Part II of this Regulation, tests required to be passed by a VAS in order to obtain approval to Part I of this Regulation shall not be repeated.

14. DEFINITIONS

For the purpose of Part II of this Regulation,

14.1. "Alarm system(s)" (AS) means an arrangement of components fitted as original equipment in a vehicle type, designed to indicate intrusion into or interference with the vehicle; these systems may provide additional protection against unauthorized use of the vehicle.

14.2. "Vehicle type" means vehicles which do not differ significantly in such essential aspects as :
the manufacturer's trade name or mark,
vehicle features which significantly influence the performances of the AS,
the type and design of the AS or VAS.

14.3. "Approval of a vehicle" means the approval of a vehicle type with regard to the requirements laid down in paragraphs 17, 18 and 19 below.

14.4. Other definitions applicable to Part II are contained in paragraph 2 of this Regulation.

15. APPLICATION FOR APPROVAL

15.1. The application for approval of a vehicle type with regard to its AS shall be submitted by the vehicle manufacturer or by his duly accredited representative.

15.2. It shall be accompanied by the under-mentioned documents in triplicate and by the following particulars :

15.2.1. A detailed description of the vehicle type and of the vehicle parts related to the AS installed.

15.2.2. A list of components necessary to identify ASs which can be installed on the vehicle.

15.2.3. When a VAS approved to Part I of this Regulation is being used, the type-approval communication of the VASs shall also be supplied to the technical service.

15.3. A vehicle representative of the type to be approved shall be submitted to the technical service.

15.4. A vehicle not comprising all the components proper to the type may be accepted provided that it can be shown by the applicant to the satisfaction of the competent authority that the absence of the components omitted has no effect on the results of the verifications, so far as the requirements of this Regulation are concerned.

15.5. The competent authority shall verify the existence of satisfactory arrangements for ensuring effective checks on conformity of production before type approval is granted.

16. APPROVAL

16.1. If the vehicle submitted for approval pursuant to this Regulation meets the requirements of paragraphs 17, 18 and 19 below, approval of that vehicle type shall be granted.

16.2. An approval number shall be assigned to each type approved. Its first two digits (00 for the Regulation in its present form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another vehicle type.

16.3. Notice of approval or of extension or of refusal of approval of a vehicle type pursuant to this Regulation shall be communicated to the Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 2 to this Regulation.

16.4. There shall be affixed, conspicuously and in a readily accessible place specified on the approval form, to every vehicle conforming to a vehicle type approved under this Regulation, an international approval mark consisting of :

16.4.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval 4/;

4/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 vacant, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30-36 (vacant) and 37 for Turkey. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement concerning the Recognition of Approval for Motor Vehicle Equipment and Parts, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

16.4.2. The number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 16.4.1.

16.5. If the vehicle conforms to a vehicle type approved under one or more other Regulations annexed to the Agreement, in the country which has granted approval under this Regulation, the symbol prescribed in paragraph 16.4.1. need not be repeated; in such a case the Regulation and approval numbers and the additional symbols of all the Regulations under which approval has been granted in the country which has granted approval under this Regulation shall be placed in vertical columns to the right of the symbol prescribed in paragraph 16.4.1.

16.6. The approval mark shall be clearly legible and indelible.

16.7. The approval mark shall be placed close to or on the vehicle data plate affixed by the manufacturer.

16.8. Annex 3 to this Regulation gives examples of arrangements of approval marks.

17. GENERAL SPECIFICATIONS

17.1. ASs shall be designed and built in such a way that they, in the event of intrusion into or interference with a vehicle, provide a warning signal, and may include an immobilizer.

The warning signal shall be audible and in addition may include optical warning devices, or be a radio alarm, or any combination of the above.

17.2. Vehicles which are equipped with alarm systems shall comply with the relevant technical requirements, especially with regard to electromagnetic compatibility (EMC).

17.3. If the AS includes the possibility of a radio transmission, e.g. for setting or unsetting of the alarm or for alarm transmission, it shall comply with the relevant ETSI Standards (see footnote 3 pertinent to para. 5.3.). The frequency must be 433.92 MHz and the maximum radiated power 25 mW.

17.4. The AS and components thereof shall not activate inadvertently, particularly whilst the engine is in its running mode.

17.5. Failure of the AS, or failure of its electrical supply shall not affect the safe operation of the vehicle.

17.6. The alarm system, its components and the parts controlled by them shall be so installed as to minimize the risk for anyone to make them inoperable or to destroy them rapidly and without calling attention, e.g. using low-cost, easily-concealed tools, equipment or fabrications readily available to the public at large.

17.7. The system shall be so arranged that the shorting out of any warning signal circuit shall not render inoperative any aspects of the alarm system, other than the circuit which is shorted out.

18. PARTICULAR SPECIFICATIONS

18.1. Protection range

18.1.1. Specific requirements

The AS shall at least detect and signal the opening of any vehicle door, engine bonnet and luggage compartment. The failure or switching off of light sources, e.g. passenger compartment light, shall not impair the control operation.

Additionally, it may comprise an immobilization facility (see paragraph 18.5. below).

The installation of additional efficient sensors for information/display, e.g. :

of intrusions into the vehicle, e.g. passenger compartment control, window glass control, breakage of any glazed area, or
of attempted vehicle theft, e.g. inclination sensor

are allowed, taking account of measures to prevent any unnecessary sounding of the alarm (= false alarm, see paragraph 18.1.2. below).

Insofar as these additional sensors generate an alarm signal even after an intrusion has occurred (e.g. by breakage of a glazed area) or under external influences (e.g. wind), the alarm signal, activated by one of the above-mentioned sensors, shall be activated not more than 10 times within the same activation period of the AS.

In this case the activation period shall be limited by the authorized unsetting of the system as a result of the vehicle user's action.

Some kinds of additional sensors, e.g. passenger compartment control (ultrasonic, infrared) or inclination sensor, etc. ..., may be intentionally deactivated. In this case, separate deliberate action must be taken each time before the AS is set. It must not be possible to deactivate the sensors while the alarm system is in a set state.

18.1.2. Safety against false alarm.

18.1.2.1. It shall be ensured that the AS both in set and unset conditions, cannot cause the alarm signal to sound unnecessarily, in the event of :

an impact on the vehicle : test specified in paragraph 7.2.13.;
electromagnetic compatibility : tests specified in paragraph 7.2.12.;
reduction of battery voltage by continuous discharge : test specified in paragraph 7.2.14.;
false alarm of the passenger compartment control : test specified in paragraph 7.2.15.

18.1.2.2. If the applicant for approval can demonstrate, e.g. by technical data, that safety against false alarm is satisfactorily ensured, the technical service responsible for conducting approval tests may not require some of the above tests.

18.2. Audible alarm

18.2.1. General

The warning signal shall be clearly audible and recognizable and shall differ significantly from the other audible signals used in road traffic.

In addition to the original equipment audible warning device, a separate audible warning device may be fitted in the area of the vehicle which is controlled by the AS, where it shall be protected against easy, rapid access by persons.

If a separate audible warning device according to paragraph 18.2.2. below is used, the original equipment standard audible warning device may additionally be actuated by the AS, provided that any tampering with the standard audible warning device (generally more accessible) does not affect the operation of the additional audible warning device.

18.2.2. Duration of the audible signal
Minimum : 25 s
Maximum : 30 s.

The audible signal may sound again only after the next interference with the vehicle, i.e. after the above-mentioned time span.
(Restrictions : see paragraphs 18.1.1. and 18.1.2. above).

Unsetting of the alarm system shall immediately cut the signal.

18.2.3. Specifications concerning the audible signal.

18.2.3.1. Constant tone signal device (constant frequency spectrum), e.g. horns : acoustical, etc... data according to ECE Regulation No. 28, Part. I.

Intermittent signal (on/off) :
Trigger frequency..... (2 ± 1) Hz
On time = off time ± 10 %

18.2.3.2. Audible signal device with frequency modulation :
acoustical, etc... data according to ECE Regulation No. 28, Part I but equal passage of a significant frequency range within the above-mentioned range (1,800 through 3,550 Hz) in both directions.

Passage frequency ..... (2 ± 1) Hz

18.2.3.3. Sound level

The sound source shall be :

either an audible warning device approved under ECE Regulation No. 28, Part I

or a device meeting the requirements of ECE Regulation No. 28, Part I, paragraphs 6.1. and 6.2. However, in the case of a different sound source from the original equipment audible warning device, the minimum sound level may be reduced to 100 dB(A), measured under the conditions of ECE Regulation No. 28, Part I.

18.3. Optical alarm - if fitted

18.3.1. General

In the event of intrusion into or interference with the vehicle the device shall activate an optical signal as specified in paragraphs 18.3.2. and 18.3.3. below.

18.3.2. Duration of the optical signal

The optical signal shall have a duration between 25 s and 5 min. after the alarm has been activated. The unsetting of the alarm system shall immediately stop the signal.

18.3.3. Type of optical signal

Flashing of all direction indicators and/or passenger compartment light of the vehicle, including all lamps in the same electrical circuit.

Trigger frequency..... (2 ± 1) Hz

In relation to the audible signal, also asynchronous signals are allowed.

On time = off time ± 10 %

18.4. Radio alarm (pager) - if fitted

The AS may include a facility generating an alarm signal by radio transmission.

18.5. Immobilizer - if fitted

If this facility, when fitted, has an influence on the ignition and/or the fuel supply system, measures shall be provided to avoid immobilization of the vehicle whilst the engine is in its running mode.

This facility shall not impair the vehicle's normal operation, even in the event of malfunction.

18.6. Alarm system setting lock

18.6.1. When the engine is in its running mode, deliberate or inadvertent setting of the alarm system shall be impossible.

18.7. Setting and unsetting of the AS

18.7.1. Setting

Any suitable means of setting of the AS is allowed, provided that such means does not inadvertently cause false alarms.

18.7.2 Unsetting

Unsetting of the AS shall be achieved by one or a combination of the following devices. Other devices giving equivalent performance are permitted.

18.7.2.1. A mechanical key (complying with requirements of Annex 8 to this Regulation) which can be coupled with a centralized vehicle locking system comprising of at least 1,000 variants, operated from the outside.

18.7.2.2. Electrical/electronic device, e.g. remote control, with at least 50,000 variants and shall incorporate rolling codes and/or have a minimum scan time of 24 hours per 5,000 variants.

18.7.2.3. A mechanical key or an electrical/electronic device within the protected passenger compartment, with timed exit/entry delay.

18.8. Exit delay

If the switching device for setting the AS is fitted within the protected area, an exit delay shall be provided. It shall be possible for the exit delay to be set to between 15 seconds and 45 seconds after the switch has been operated. The delay period may be adjustable to suit individual operators' circumstances.

18.9. Entry delay

If the device for unsetting the VAS is fitted within the protected area, a delay of 5 seconds minimum and 15 seconds maximum shall be allowed before the activation of the audible and optical signals. The delay period may be adjustable to suit individual operators' circumstances.

18.10. Status display

18.10.1. To provide information on the status of the AS (set, unset, alarm setting period, alarm has been activated), the installation of optical displays is allowed inside and outside the passenger compartment. The light intensity of optical signals installed outside the passenger compartment shall not exceed 0.5 cd.

18.10.2. If an indication of short-term "dynamic" processes such as changes from "set" to "unset" and vice versa is provided, it shall be optical, according to paragraph 18.10.1. Such optical indication may also be produced by the simultaneous operation of the direction indicators and/or passenger compartment lamp(s), provided that the duration of the optical indication by the direction indicators does not exceed 3 seconds.

18.11. Power supply

The source of power for the AS may be the vehicle battery.

Where provided, an additional battery shall be rechargeable and it shall by no means supply energy to the other parts of the vehicle electrical system.

18.12. Specifications for optional functions

18.12.1. Self check, automatic failure indication

On setting the AS, irregular situations, e.g. open doors, etc., can be detected by a self-check function (plausibility control), and this situation is indicated.

18.12.2. Panic alarm

An optical and/or audible and/or radio alarm is allowed independent of the state (set or unset) and/or function of the AS. Such an alarm shall be triggered from within the vehicle and shall not affect the state (set or unset) of the AS. Also it must be possible for the vehicle user to switch off the panic alarm. In the case of an audible alarm, its sounding duration per activation shall not be restricted. A panic alarm shall not immobilize the engine or stop it if it is running.

19. TEST CONDITIONS

All components of the VAS or AS shall be tested in accordance with procedures described in paragraph 7.

This requirement does not apply to:

19.1. Those components that are fitted and tested as part of the vehicle, whether or not a VAS/AS is fitted (e.g. lamps); or,

19.2. Those components that have previously been tested as part of the vehicle and documentary evidence has been provided.

20. INSTRUCTIONS

Each vehicle shall be accompanied by :

20.1. Instructions for use :

20.2. Instructions for maintenance

20.3. A general warning regarding the danger of making any alterations or additions to the system.

21. MODIFICATION OF THE VEHICLE TYPE AND EXTENSION OF APPROVAL

21.1. Every modification of the vehicle type shall be notified to the administrative department which approved the vehicle type. The department may then either

21.1.1. Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the AS still complies with the requirements, or

21.1.2. Require a further report from the technical service.

21.2. Confirmation or refusal of approval, specifying the alteration, shall be communicated by the procedure specified in paragraph 16.3. above to the Contracting Parties to the Agreement applying this Regulation.

21.3. The competent authority issuing the extension of approval shall assign a serial number to each communication form drawn up for such an extension.

22. CONFORMITY OF PRODUCTION

22.1. Every vehicle approved pursuant to this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set out in paragraphs 17, 18 and 19 above.

22.2. In order to verify that the requirements of paragraph 21.1. are met, suitable checks of the production shall be carried out.

22.3. The holder of the approval shall in particular :

22.3.1. Ensure existence of procedures for effective quality control of the vehicles as regards all aspects relevant to compliance with the requirements set out in paragraphs 17, 18 and 19 above.

22.3.2. Ensure that for every approved vehicle sufficient checks are carried out, in such a way that all vehicles in production comply with the specifications of the vehicles submitted for type approval.

22.3.3. Ensure that, if the checks carried out pursuant to paragraph 22.3.2. above give evidence of non-conformity of one or more vehicles with the requirements set out in paragraphs 17, 18 and 19 above, all necessary steps are taken to restore conformity of the corresponding production.

22.4. The competent authority which has granted type approval may at any time verify the conformity control methods applied in each production unit. The authority may also carry out random checks on serially manufactured vehicles with respect to the requirements set out in paragraphs 17, 18 and 19 above.

22.5. Where unsatisfactory results are found during verifications and checks pursuant to paragraph 22.4. above, the competent authority shall ensure that all necessary steps are taken to restore conformity of production as rapidly as possible.

22.6. The normal frequency of inspections authorized by the competent authority shall be one every two years. In cases where unsatisfactory results are found during one of these inspections, the competent authority shall ensure that all necessary steps are taken to restore conformity of production as rapidly as possible.

23. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

23.1. The approval granted in respect of a vehicle type pursuant to this Regulation may be withdrawn if the requirements laid down in paragraph 22 above are not complied with.

23.2. If a Contracting Party to the Agreement applying this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation, by means of a form conforming to the model in Annex 2 to this Regulation.

24. PRODUCTION DEFINITELY DISCONTINUED

If the holder of the approval completely ceases to manufacture a vehicle type approved in accordance with this Regulation, he shall so inform the authority which granted the approval.

Upon receiving the relevant communication, that authority shall inform thereof the other Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 2 to this Regulation.

25. NAMES AND ADDRESSES OF TECHNICAL SERVICES RESPONSIBLE FOR CONDUCTING APPROVAL TESTS, AND OF ADMINISTRATIVE DEPARTMENTS

The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations secretariat the names and addresses of the technical services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval, issued in other countries are to be sent.

Annex 1

(maximum format: A4 (210 x 297 mm))

COMMUNICATION

issued by: Name of administration:
.....
.....
.....

concerning: 2/ APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

of a type of Vehicle Alarm System (VAS) pursuant to Part I of Regulation No. 97

Approval No.: .... Extension No.: ....

1. Trade name or mark of the VAS : . . . . . .

2. Type of VAS : . . . . . .

3. Manufacturer's name and address : . . . . . .

4. If applicable, name and address of manufacturer's representative :

. . . . . .

5. Brief description of the VAS and of the immobilizer (if applicable) :

. . . . . .

6. Type of vehicle on which the VAS has been tested : . . . . . .

7. System submitted for approval on : . . . . . .

8. Technical service responsible for conducting approval tests : . . . .

9. Date of report issued by that service : . . . . . .

10. Number of report issued by that service : . . . . . .

11. Approval has been granted/refused/extended/withdrawn 2/

12. Reason(s) for extension of approval : . . . . . .

. . . . . .

13. If applicable, position of the approval mark(s) on the main components :

. . . . . .

14. Place : . . . . . .

15. Date : . . . . . .

16. Signature : . . . . . .

17. The following documents, bearing the approval number shown above, are attached to this communication :

list of components, duly identified, constituting the VAS;

list of files deposited with the Administrative Service which has granted type approval, and which can be obtained upon request.

1/ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

2/ Strike out what does not apply.

Annex 2
(Maximum format : A4 (210 x 297 mm))

COMMUNICATION

issued by: Name of administration:
.....
.....
.....

concerning: 2/ APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

of a vehicle type with regard to its Alarm System pursuant to Part II of Regulation No. 97

Approval No.: .... Extension No.: ....

1. Trade name or mark of the vehicle : . . . . . .

2. Vehicle type : . . . . . .

3. Manufacturer's name and address : . . . . . .

4. If applicable, name and address of manufacturer's representative :

. . . . . .

5. Brief description : . . . . . .

. . . . . .

6. Vehicle submitted for approval on : . . . . . .

7. Technical service responsible for conducting approval tests : . . . .

8. Date of report issued by that service : . . . . . .

9. Number of report issued by that service : . . . . . .

10. Approval has been granted/refused/extended/withdrawn 2/

11. Reason (s) for extension of approval : . . . . . .

. . . . . .

12. Position of the approval mark on the vehicle : . . . . . .

13. Place : . . . . . .

14. Date : . . . . . .

15. Signature : . . . . . .

16. The following documents, bearing the approval number shown above, are attached to this communication :

list of components, identifing alarm systems which can be installed on the vehicle type;

list of files deposited with the Administrative Service which has granted type approval, and which can be obtained upon request.

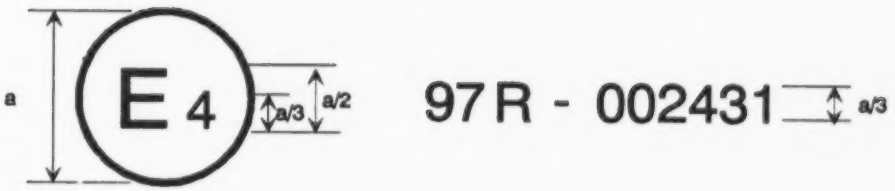
1/ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

2/ Strike out what does not apply.

Annex 3

ARRANGEMENTS OF APPROVAL MARKS

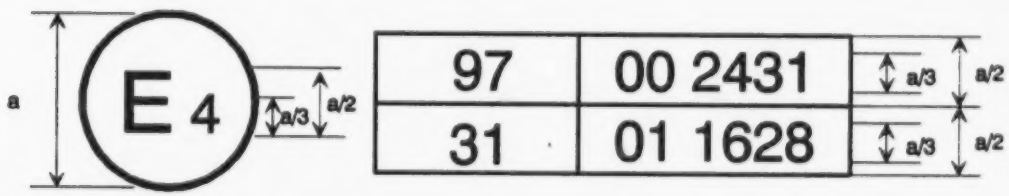
Model A



a ≥ 5 mm

The above approval mark affixed to a VAS/Vehicle shows that the VAS/Vehicle has been approved in the Netherlands (E4), pursuant to Regulation number 97 under approval number 00 2431. The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of Regulation number 97 in its original form.

Model B



a ≥ 5 mm

The above approval mark affixed to a vehicle shows that the vehicle has been approved in the Netherlands (E4), pursuant to Regulations number 97 and 31. */ The first two digits of the approval number indicate that, at the dates when respective approvals were given, Regulation 97 was in its original form and Regulation 31 already included the 01 series of amendments.

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*/ This latter number is given as an example only.

Annex 4

MODEL OF CERTIFICATE OF CONFORMITY

I the undersigned . . . . . .
(surname and name)

Testify that the vehicle alarm system described below :

Make : . . . . . .

Type : . . . . . .

is in total conformity with the type approved

at ..... on . . . . . .
(place of approval) (date)

as described in the communication form bearing approval No. . . . . .

Identification of the main component(s) :

Component : ..... Marking : . . . . . .
....
....

Done at :..... on : . . . . . .

Manufacturer's full address and stamp : . . . . . .
. . . . . .
. . . . . .

Signature : . . . . . (please specify position)

Annex 5

MODEL OF INSTALLATION CERTIFICATE

I the undersigned . . . . . .
professional installer, certify that the installation of the vehicle alarm system described below has been carried out by myself pursuant to the mounting instructions supplied by the manufacturer of the system.

Description of the vehicle :

Make : . . . . . .

Type : . . . . . .

Serial number : . . . . . .

Registration number : . . . . . .

Description of the vehicle alarm system :

Make : . . . . . .

Type : . . . . . .

Approval number : . . . . . .

Done at : ..... on : . . . . . .

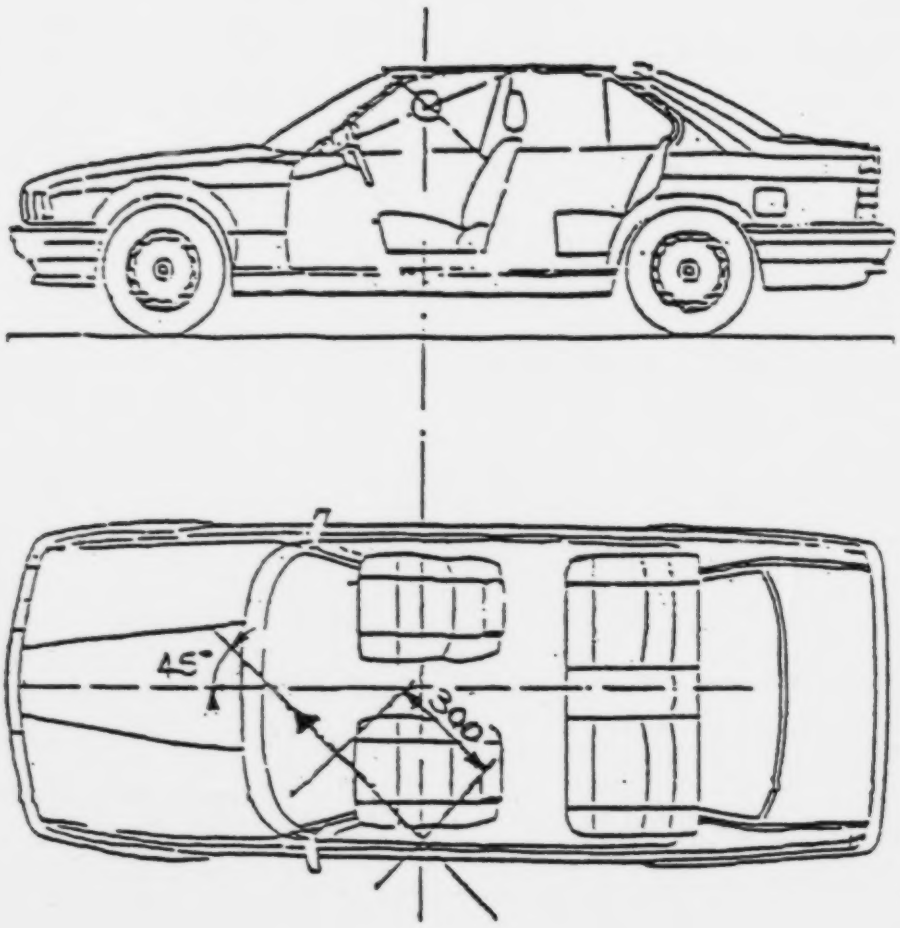
Installer's full address and stamp : . . . . . .
. . . . . .
. . . . . .

Signature : . . . . . (please specify position)

Annex 6

Paragraphs 7.2.11 and 19

Test of systems for the protection of the passenger compartment



Annex 7

ELECTROMAGNETIC COMPATIBILITY

Note : To test the electromagnetic compatibility, either paragraph 1 or paragraph 2 shall be used, depending on the test facilities.

1. ACCORDING TO THE ISO METHOD

Immunity against disturbances conducted along supply lines

Apply the test pulses 1, 2, 3a, 3b, 4 and 5 according to the International Standard ISO 7637-1-1990 to the supply lines as well as to other connections of VAS/AS which may be operationally connected to supply lines.

VAS/AS in unset state

The test pulses 1 through 5, shall be applied with a degree of severity III. The required functional status for all applied test pulses shall be A.

VAS/AS in set state

The test pulses 1 through 5 shall be applied. The required functional status for all applied test pulses are given in table 1.

Table 1 - Severity/functional status (for supply lines)

Test pulse No	Test level	Functional status
1	III	C
2	III	A
3a	III	C
3b	III	A
4	III	B
4	I	A
5	III	A

Immunity against disturbance coupled on signal lines

Leads which are not connected to supply lines (e.g. special signal lines) shall be tested in accordance with the International Standard ISO/DIS 7637 part 3-1993. The required functional status for all applied test pulses are given in table 2.

Table 2 - Test level / functional status (for signal lines)

Test pulse No	Test level	Functional status
3a	III	C
3b	III	A

Immunity against radiated high frequency disturbances

Testing of the immunity of a VAS/AS in a vehicle may be performed according to one of the methods described in the International Standard ISO 11451 - 1 through 4-1993, or laboratory testing may be performed according to one of the methods described in the International Standard ISO 11452 - 1 through 7-1993.

Test severity level II shall be applied. The functional status A shall be maintained during and after the test. For values of severity level see relevant part of the International Standards ISO 11451-1993 and 11452-1993. A description of the functional status is given in part 1 of both standards.

Electrical disturbance from electrostatic discharges

Immunity against electrical disturbances shall be tested in accordance with ISO/TR (Technical Report) 10605-1993.

Radio frequency interference (RFI) suppression

Tests according to the relevant clause of CISPR 12-1990.

2. ACCORDING TO THE IEC METHOD

Electromagnetic field

The VAS/AS shall undergo the basic test. It shall be subjected to the electromagnetic field test described in IEC Publication 839-1-3-1988 test A-13 with a frequency range extended to 1000 MHz and 50 V per m.

And

The VAS/AS shall be subjected to the electrical transient conducted and coupled tests described in the International Standard ISO 7637 Parts 1-1990 and 3-1993 as appropriate.

Immunity against radiated high frequency disturbances

The VAS/AS shall be subjected to testing for immunity against radiated high frequency disturbances as described in the International Standard ISO 11452-1993 Parts 1 to 7 as appropriate.

Electrical disturbance from electrostatic discharges

The VAS/AS shall undergo the basic test. It shall be subjected to the electrostatic discharge test described in IEC Publication 839-1-3-1988 test A-11 (severity 3).

Or

The VAS/AS shall be subjected to testing for immunity against electrostatic discharge as described in ISO TR (technical report) 10 605-1993.

Radio frequency interference (RFI) suppression

The VAS/AS shall be subjected to testing for the suppression of radio frequency interference according to tests prescribed in the relevant clauses of CISPR12-1990.

Electrical spikes

The VAS/AS shall undergo the basic test. It shall be subjected to the electrical spikes as described in IEC Publication 839-1-3-1988 test A-9 (severity 4).

Annex 8

SPECIFICATIONS FOR MECHANICAL KEY SWITCHES

1. The cylinder of the key switch shall not protrude by more than 1 mm from the cowling, and the protruding part shall be conical.

2. The joint between the cylinder core and the cylinder casing shall be capable of withstanding a tensile force of 600 N and a torque of 25 Nm.

3. The key switch shall be provided with a cylinder drill obstruction.

4. The key profile shall have at least 1,000 effective permutations.

5. The key switch shall not be operable by a key which differs by only one permutation from the key matching the key switch.

6. The key aperture to an external key switch shall be shuttered or otherwise protected against the penetration of dirt and/or water.